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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,336	06/30/2003	Upendra V. Chaudhari	YOR20030043US1 (590.105)	3723
35195 7590 09/28/2007 FERENCE & ASSOCIATES LLC 409 BROAD STREET PITTSBURGH, PA 15143			EXAMINER WOZNIAK, JAMES S	
			ART UNIT 2626	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/611,336

Applicant(s)

CHAUDHARI ET AL.

Examiner

James S. Wozniak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the office action from 3/22/2007, the applicant has submitted an amendment, filed 7/23/2007, amending independent claims 1, 8, and 15, while adding claims 16-17 and arguing to traverse the art rejection based on the limitation regarding ascertaining an acoustic environment from which the at least one base model originated (*Amendment, Page 7*). Applicant's arguments have been fully considered, however the previous rejection is maintained, altered with respect to the additional claims and due to the reasons listed below in the response to arguments.

2. In response to amended claims 2 and 9, the examiner has withdrawn the previous 35 U.S.C. 112, first paragraph rejection directed towards the written description requirement.

Response to Arguments

3. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claims 1, 8, and 15**, the applicant argues that the amendments to these claims are sufficient to overcome the 35 U.S.C. 101 rejections. The examiner points out that while the amendment to claim 15 to include "computer" language would overcome one aspect of

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the previous 35 U.S.C. 101 rejections (*i.e., lack of a computer readable medium executed by a computer to perform a method*), claims 1, 8, and 15 are still directed to non-statutory subject matter because no “useful, concrete, and tangible result” is generated. In each of the aforementioned claims the final result is directed to an abstract target model that does not provide any information to a user or is not used in a practical and useful application such as speech or speaker recognition. In order for a claimed invention to be considered statutory under 35 U.S.C. 101, it must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result” (*State Street, 149 F.3d at *1373-74*, 47 USPQ2d at 1601-02). Since the invention recited in claims 1, 8, and 15 produces an abstract target model that is not used in any practical application (*i.e., speech recognition or speaker recognition*) or does not provide any type of information to a user (*i.e., a recognition output, etc.*), claims 1, 8, and 15 remain rejected under 35 U.S.C. 101.

Amended claim 1 further incorporates the terms “*signal processing apparatus*”, “*input signal*”, and “*output signal*”. Although the specification does describe an apparatus, an input arrangement, and a target model, these elements are not defined by the terms “*signal processing*” or “*signal*” in the disclosure of the invention. Thus, since the specification does not define these terms, their inclusion in claim 1 raises the issue of new matter. Also, claim 15 incorporates the term “*computerized machine*”. Although the specification discloses method implementation as a program running specifically on a “*computer*” (*Page 12, Lines 9-10*), the specification does not define what is meant by the term “*computerized machine*”. Thus, claim 15 is also directed to new matter.

With respect to **Claims 1, 8, and 15**, the applicant argues that Rahim (*U.S. Patent: 5,960,397*) fails to teach “ascertain[ing] an environment from which the at least one base model originated” because Rahim instead teaches “identifying the acoustic environment of the unknown speech” (*Amendment, Page 7*). In response, the examiner points out that Rahim does teach identifying the environment of a base model is identified in Rahim. Specifically, Rahim discloses that training or base models are assigned to N particular acoustic environments (*Col. 6, Line 63- Col. 7, Line 46*). Fig. 2 also shows that initial or base models are defined according to acoustic environments. These environment-defined base models are then applied to an input and utilized in creating a target model for a particular acoustic environment (*Col. 6, Lines 1-14; Col. 8, Lines 11-22; and Col. 8, Line 59- Col. 9, Line 22*). This interpretation of the Rahim reference is also set forth in the prior Office Action (*Pages 5-6*). Thus, since Rahim discloses that initial training or base models are classified and utilized in recognition model adaptation, Rahim teaches the aforementioned claim limitation.

Applicant's arguments that Rahim fails to teach “cascading of two model levels...for channel mismatch compensation” fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

The art rejection of the remaining dependent claims is traversed for reasons similar to Claims 1, 8, and 15 (*Amendment, Page 7*). In regards to such arguments, see the response to arguments directed to claims 1, 8, and 15.

Information Disclosure Statement

4. The information disclosure statement filed 7/23/2007 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication (*McLachlan et al*) or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. **Claims 1-7** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 incorporates the terms “*signal processing apparatus*”, “*input signal*”, and “*output signal*”. Although the specification does describe an apparatus, an input arrangement, and a target model, these elements are not defined by the terms “*signal processing*” or “*signal*” in the disclosure of the invention. Thus, since the specification does not define these terms, claim 1 fails to comply with the written description requirement. The dependent claims 2-7 fail to

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overcome the 35 U.S.C. 112, first paragraph rejection directed towards claim 1, thus, these claims also fail to comply with the written description requirement by virtue of their dependency. Also claim 15 incorporates the term “computerized machine”. Although the specification discloses method implementation as a program running specifically on a “computer” (*Page 12, Lines 9-10*), the specification does not define what is meant by the term “*computerized machine*” or “*computerized*”. Thus, claim 15 fails to comply with the written description requirement.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. **Claims 1-17** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is drawn to a processing apparatus that manipulates abstract speech models to produce adjusted abstract speech models. In order for a claimed invention to be considered statutory under 35 U.S.C. 101, it must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result” (*State Street, 149 F.3d at *1373-74*, *47 USPQ2d at 1601-02*). Since the final result of the claimed invention is an abstract speech model and not a tangible real-world output (for example, displayed text corresponding to a speech utterance), claim 1 is directed to non-statutory subject matter.

Dependent claims 2-7 and 16 fail to overcome the 35 U.S.C. 101 rejection directed towards independent claim 1, and thus, these claims are also directed to non-statutory subject matter.

In independent claims 8 and 15, no such result is obtained either because there is no claimed tangible output (*for example, displayed text corresponding to a speech utterance*) (*See State Street, 149 F.3d at *1373-74*, 47 USPQ2d at 1601-02- "The claimed invention as a whole must be useful and accomplish a practical application. That is, it must produce a "useful, concrete and tangible result."). Thus, claims 8 and 15 contain non-statutory subject matter for reasons similar to claim 1.

Dependent claims 9-14 and 17 fail to overcome the 35 U.S.C. 101 rejection directed towards independent claim 8, and thus, these claims are also directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 1-17** are rejected under 35 U.S.C. 102(b) as being anticipated by Rahim (*U.S. Patent: 5,960,397*).

With respect to **Claims 1 and 8**, Rahim discloses:

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An input arrangement which input features (*receiving input speech features, Col. 5, Lines 31-42*);

A base model provision arrangement which provides at least one base model (*parallel models- set of recognition training models corresponding to particular environments, Col. 5, Lines 53-67; Col. 6, Line 31- Col. 7, Line 55*);

An environment detector which ascertains an environment from which the at least one base model originated (*classifier that identifies an acoustic environment of a training model, Col. 5, Lines 53-60; Col. 6, Line 31- Col. 7, Line 55*); and

A transform arrangement which produces a target model based on a feature vector corresponding to the environment from which the at least one base model originated (*model transform based on a model from an particular environment, wherein model parameters in a vector space, or vectors, are utilized, Col. 6, Lines 1-14; Col. 8, Lines 11-22; and Col. 8, Line 59- Col. 9, Line 22*).

With respect to **Claims 2 and 9**, Rahim further discloses:

The apparatus is adapted to perform speech recognition (*speech recognition, Col. 6, Lines 15-22*) and said input arrangement is adapted to input linguistic features (*input speech features, Col. 5, Lines 31-42, which correspond to word portions, Col. 1, Lines 16-20*).

With respect to **Claims 3 and 10**, Rahim further discloses:

The base model provision arrangement is adapted to build a pool of base models (*plurality of models corresponding to different acoustic environments, Col. 7, Lines 41-5*).

With respect to **Claims 4 and 11**, Rahim further discloses:

The base models are Gaussian Mixture Models (*GMMs, Col. 6, Lines 41-46*).

With respect to **Claims 5 and 12**, Rahim further discloses:

The environment detector is adapted to express the closeness of a set of at least one input feature to a given base model (*identifying the acoustic environment of unknown speech, Col. 5, Lines 53-60*).

With respect to **Claims 6 and 13**, Rahim further discloses:

The feature vector represents at least one likelihood associated with at least one input feature in a given environment (*likelihood associated with identifying an acoustic environment corresponding to input speech features, Col. 5, Lines 9-21*).

With respect to **Claims 7 and 14**, Rahim further discloses:

The environment detector is adapted to inform the production of the feature vector in correspondence with the environment from which the at least one base model originated (*determining and providing the most similar model to input speech features for model adjustment, Col. 10, Lines 10-38*).

With respect to **Claim 15**, Rahim discloses the system and method for model adaptation, as applied to claims 1 and 8, as software stored in a ROM (*Col. 4, Lines 38-59*).

With respect to **Claims 16-17**, Rahim further discloses:

Cascading of two model levels is utilized for channel mismatch compensation (*model adaptation for channel mismatch (i.e., channel distortion and acoustic transducer effects) that overlaps or projects sequences of model spaces, Col. 2, Lines 26-39 and Col. 8, Line 59- Col. 9, Line 6*).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Reynolds (*U.S. PG Publication: 2004/0015358*)- discloses a technique for baseline recognition model compensation.


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
8/29/2007


PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER